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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,691	09/10/2003	Alfred Chan Chung Tseung	1260.006US2	7514
21186	7590	03/17/2004	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EASTHOM, KARL D	
			ART UNIT	PAPER NUMBER
			2832	

DATE MAILED: 03/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/659,691		TSEUNG ET AL.	
	Examiner		Art Unit	
	Karl D Easthom		2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☒ Claim(s) 38 is/are objected to.
- 8) ☒ Claim(s) 18-37 and 39-40 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 18-24, 27-29 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Tosaki et al. The term “for monitoring carbon monoxide” is part of the preamble and is not afforded patentable weight here. For claims 20-22, Tosaki discloses the claimed invention at the sole Figure where on the line C-D is Ni_{0.33}Co_{0.66} and y has to be in the range because the compound is disclosed as a spinel, and applicant’s claims encompass the spinel form NiCo₂O₄. The ranges are met by division of the latter by 3 as explained by applicant in his remarks in parent 10/208601. For claim 23, electrodes are disclosed at col. 2, lines 35-40. The resistance is monitored as at TABLE 1, meeting claims 18-19, and 26, since current is a function of the resistance. air is in contact with the thermistor. For claim 40, the reference element is one of the other thermistors of TABLE 1. For claims 27-29, how the device is made is not material where there is no evidence that the process limitations create distinct products. For alternatives to some of the product by process claims, see below.

3. Claims 18-24, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ando et al. The term “for monitoring carbon monoxide” is not given weight. Ando discloses the claimed invention at col. 3 lines 15-30 where the spinel form of NiCo₂O₄ is disclosed. For claim 19, resistance changes due to the change in electron density and it is monitored by measuring the optical characteristics. For claim 27, the metal nitrates are applied to a sapphire substrate, and there is decomposition by pyrolysis, see cols. 3-4. The conductivity, and hence

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resistance, is "monitored" by measuring the optical absorbance according to the theory of operation as disclosed at the top of col. 3.

4. Claims 18, 20-24, and 36-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Charkey et al. The term "for detecting carbon monoxide" is not given weight. Charkey discloses the claimed invention at the abstract where the spinel form of $\text{NiCo}_{2.5}\text{O}_4$ is disclosed, having graphite of claims 36-37. The electrical property is monitored by measuring the cycle time or current at the top of col. 4.

5. Claims 18-24, and 34-35 are rejected under 35 U.S.C. 102(b) as being anticipated by de Nora et al. The term "for detecting carbon monoxide" is not given weight. De Nora discloses the claimed invention at col. 4, lines 30-52, where Pt is mixed with the spinel form of $\text{NiCo}_{2.5}\text{O}_4$, meeting claims 34-35. The electrical property is monitored at the top of col. 13, where conductivity means resistance, for claims 18-19 is monitored, and the device is employed in air.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 18-24 and 40 are rejected under 35 U.S.C. 102(b) as anticipated by or Maki et al. or, in the alternative, under 35 U.S.C. 103(a) as obvious over Maki et al. in view of Klein et al. Maki discloses the claimed invention at col. 12, where spinels including Ni and Co are mentioned at col. 12, lines 55-60, with CuCo_2O_4 specifically mentioned as an oxygen catalyst

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employed in a carbon monoxide detector such that an electromotive force is monitored, meeting the claim. Where the specific spinel is not adequately disclosed, Klein discloses the claimed spinel at the abstract as useful electro catalyst so that it would have been obvious to employ that in the Maki device given the disclosure that such a catalyst is useful for carbon monoxide detection. The comparison tests on other sensors at col. 33, lines 33-65 meet claim 40 as a reference sensor.

8. Claims 32, 33 and 39 is rejected under 35 U.S.C. 103(a) as obvious over Maki et al. with Klein et al. The claimed invention is disclosed except the display of current versus carbon monoxide. At Fig. 32, voltage versus CO is displayed, and it would have been obvious to convert current to voltage since the two are related by ohms law, the Examiner taking Official Notice of the well known law. As to the warning, the device is for home safety at col. 1, and it would have been obvious to warn the homeowner else the CO detector is essentially useless as a CO detection home safety device.

9. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tosaki et al. in view of Ito et al. The claimed invention is disclosed except for the gold electrodes. For claim 26, current is monitored to determine the resistance of TABLE 1, as the at is the only way to determine same. Ito at col. 3, lines 40-50 discloses gold electrodes as useful for thermistors such as than of Tosaki, for monitoring the current or the voltage, where the device is a thermistor, so that it would have been obvious to employ the gold to monitor the device properties.

10. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tosaki et al., a et al., in view of Klein et al. Tosaki discloses the claimed invention except for forming

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the spinel by thermal decomposition of nickel nitrates and cobalt. That method is disclosed at Example 6 of Klein et al for forming the spinel of Tosaki et al., so that such a method would have been obvious to form in the known method. The method is also disclosed at col. 3, lines 29-39 of Bianchi for the same reasons and for using metal substrates. A nickel sheet was employed for the method at the top of col. 10 of Klein to make the thermistor composition of Tosaki et al., and where Ito at col. 6, lines 50-60, or Ito et al. at col. 3, lines 50-56 discloses nickel electrodes as useful for the electrodes of a thermistor, it would have been obvious to use that nickel foil for the purpose of forming an electrode of a known material for thermistors for the purpose of providing current to the device. 4.

11. Claim 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tosaki et al., in., further in view Bianchi et al. or Klein et al., as applied to claims above, further in view of either Ito et al. or Tosaka et al. The noted references disclose the claimed invention as noted above and as noted here except for the nickel foil. A nickel sheet was employed for the method at the top of col. 10 of Klein to make the thermistor composition of Tosaki et al., and where Tosaka at col. 6, lines 50-60, or Ito at col. 3, lines 50-56 discloses nickel electrodes as useful for the electrodes of a thermistor, it would have been obvious to use that nickel foil for the purpose of forming an electrode of a known material for thermistors for the purpose of providing current to the device. For claim 31, the film was sprayed, so that whether or not it is electrostatic spray is not material where the device claimed still has the same nickel material and no allegation of structural difference is alleged.

12. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ando, in view of Duruz et al. Ando discloses the claimed invention except forming a gel by evaporation of a

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solution of cobalt and nickel nitrates and drying and heating the gel at the claimed temperatures. Ando discloses forming a solution of the metal nitrates on a substrate at cols. 3-4 in general and employing general methods known in the arts to make same. Duruz discloses using stoichiometric ratios of a nitrate to form the gel method at Example 2, col. 11 in order to obtain a similar NiFe spinel, where drying occurs which includes some evaporation, and then heat treating at 500 degrees, so that it would have been obvious to form the same or similar composition where Ando discloses using known methods in the art and lists mixing nitrates of the two metals of the spinel.

13. Claim 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Primarily, the combination of when carbon monoxide is detected, the resistance of the sensor element increases and the current through the sensor element decreases; and triggering an alarm or warning, is not disclosed or suggested in the claimed combination. That is or further, the preamble is given weight since the limitations breathe life and meaning thereto. In Maki et al., the resistance does not increase and the current decreases in the device where it appears that the output or voltage increases –see Fig. 32. This is true for the catalyst type detector used to reject claim 1. It is further true for the spinel type detector CuFe_2O_4 as disclosed at cols. 31-32, see col. 32, lines 65-67, where Fig. 30 indicates that the resistance decreases and instead of increasing. This is due to a combination of addition of Au perhaps, but regardless, Maki teaches away from employing resistance increasing devices at cols. 31-32, lines 60-15, because the increase in resistance causes unstable devices.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl D Easthom whose telephone number is (272) 571-1989.

The examiner can normally be reached on M-Th, 5:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on (272) 571-1989. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karl D Easthom
Primary Examiner
Art Unit 2832

KDE